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EXAMINER	
RUTTEN, JAMES D	

ART UNIT	PAPER NUMBER
2192	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/817,880	TROWBRIDGE, SEAN E.	
	Examiner	Art Unit	
	J. Derek Rutten	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to Applicant's submission filed 6/13/2006, responding to the 3/13/2006 Office action which detailed the rejection of claims 1-33. Claims 1, 20, 28, 30, 32, and 33 have been amended. Claims 1-33 remain pending in the application and have been fully considered by the examiner.

2. Applicant's arguments, see pages 10 and 11, filed 6/13/2006, with respect to the rejections of claims 20-22 and 27-29 under 35 U.S.C. § 102(e) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. Applicant's arguments, see pages 12 and 13, filed 6/13/2006, with respect to the rejections of claims 1-10, 12-19, 23-26, and 30-33 under 35 U.S.C. § 103 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,126,330 to Knight.

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Amendments/Arguments

4. A number of amendments have been made addressing the rejections under 35 U.S.C. 101.

Claim 1 has been amended to include a "computer implemented system" including a "log to store ... information." This has been interpreted as a system that necessarily requires hardware, and satisfies the requirements of 35 U.S.C. § 101. Therefore, the rejections of claims 1-18 have been withdrawn.

Applicant has not amended claim 19, which is directed to a "computer-readable medium having computer-executable components." Such a medium may be provided by an electromagnetic signal, which appears to be nonstatutory. Therefore, this rejection is maintained.

Claim 30 has been amended to recite a "computer implemented signal..." However, electromagnetic signals do not appear to be statutory subject matter. Therefore, this rejection is maintained.

Claim 32 has been amended to recite a "computer implemented means...comprising: ...execution of a virtual system". This is interpreted as directed to a system that necessarily requires hardware to execute. Therefore, this rejection has been withdrawn.

Claim 33 has been amended to recite a "computer implemented virtual software system." Such a system appears to be directed to software, per se (functional descriptive material). Such a system is not interpreted as containing statutory subject matter, so the rejection is maintained.

5. Amendments to claim 32 have obviated the rejection under 35 U.S.C. 112. Accordingly, this rejection has been withdrawn.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 19, 30 and 31 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 19 is directed to a "computer-readable medium". However, this medium is not limited to tangible embodiments. A description of computer readable media can be found on page 12, line 21 – page 13, line 5. While this description includes tangible embodiments such as a hard disk, magnetic disk, and CD, page 13 lines 1-5 expressly envisions media to include "other types of media readable by a computer". However, wireless media could be read by a computer, but are considered to be a form of electro-magnetic signal, which appears to be non-statutory. Claims 30 and 31 are drawn to a "signal". However, as seen in the limitations of claim 31, a "signal" could be interpreted to include wireless, or electromagnetic signals which appear to be nonstatutory. Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in § 101. For further information, see Official Gazette, Nov. 22, 2005, 1300 OG 142, "Interim Guidelines for Examination of Patent Applications for Patent

Subject Matter Eligibility", Annex IV(c), which can be found online at <http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm>.

8. Claim 33 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 33 is drawn to a "virtual software system" which is interpreted as a functional descriptive computer program, per se. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1, 2, 5-17, 19, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art of record U.S. Patent Number 5,761,512 to Breslau et al. (hereinafter "Breslau") in view of prior art of record U.S. Patent Number 6,571,389 to Spyker et al.

(hereinafter "Spyker"), and further in view of "HotSpot: A new breed of virtual machine" by Armstrong (hereinafter "Armstrong")

In regard to Claim 1, Breslau teaches *a log to store information relating to an operating environment of a system* (Figure 2), *the logged information is employed as feedback to generate a native executable* (Figure 3, item 59). Breslau also discloses that any applicable characteristic can be stored in a log. See column 4 lines 60-64. Breslau does not teach that a loader is used to determine availability, that the system is a virtual subsystem, creation of a native executable according to a particular user, nor that the native executable is utilized to provide improved performance of the virtual subsystem.

However, in an analogous environment, Armstrong teaches *a loader to determine availability of a specialized image that is associated with an operating environment of the virtual subsystem.* See the "Control" block in the figure at the bottom of page 3; also see the top of page 4: "When a method is invoked, the native machine-code version is used, if it exists." Also in an analogous environment, Spyker teaches generating native executables on a virtual subsystem for improving the performance of the subsystem (Column 1, lines 22-27 and lines 37-44). Spyker further teaches that a user can control the creation of a runtime image (Spyker column 14 lines 44-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Armstrong's loader with Breslau's environment log. One would be motivated to use a loader that checks for specialized images in order to optimize execution time (Armstrong page 4 paragraph 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Spyker's virtual

subsystem with Breslau's environment. One of ordinary skill would have been motivated to allow a programming image to be utilized in a number of different environments that support a virtual subsystem. One of ordinary skill would have also been motivated to enable the creation of an executable runtime image according to a user in order to prepare the image for loading and execution at the user's discretion.

None of the above references expressly teaches runtime information related to a particular user. However, Knight teaches collecting runtime feedback associated with a particular user (See column 6 lines 22-27: "As an application is being used by the developer, as generally shown by numeral 11, all object identifiers corresponding to IWindow objects within the application being changed, affected by or interacted with in some way by the developer /user, are logged in object display area 15 of the screen of setup tool 10"). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Knight's teaching of user feedback with Breslau's native executable in order to overcome the problems with "compile-time" instrumentation (see Knight column 2 lines 12-22).

In regard to Claim 2, Breslau teaches that the native executable is selected for execution by the virtual subsystem by matching a current environment setting with the logged information (Column 8, lines 22-27).

In regard to Claim 5, Breslau teaches a local data log (Figure 4, item 135).

In regard to Claim 6, Breslau teaches a data log stores 1 though N environment parameter descriptions associated with 1 to N encountered images, wherein N is an integer (Figure 1A).

In regard to Claim 7, Spyker teaches a virtual machine as a virtual subsystem which uses an intermediate code image (Figure 1, lines 22-27 and lines 39-44).

In regard to Claim 8, Spyker teaches a Just-In-Time compilation (Column 1, lines 39-44).

In regard to Claim 9, Spyker teaches that the virtual subsystem generates native platform code (Column 1, lines 39-44).

In regard to Claim 10, Spyker teaches installing or running a generic code image by converting it into a native executable (Column 1, lines 39-44).

In regard to claim 11, Spyker teaches creating a runtime image according to a method of invocation (column 14 lines 48-52).

In regard to Claim 12, Spyker teaches generating a native code image using the virtual machine (Column 1, lines 39-44).

In regard to Claim 13, Breslau teaches am image processor for processing feedback and generating a native executable (Figure 3).

In regard to Claim 14, Breslau teaches that the image processor comprises a compiler (Figure 3, item 59).

In regard to Claim 15, Breslau teaches an image-processing tool to read the logged information and associate one or more environmental settings with one or more related images encountered during virtual subsystem execution (Column 9, lines 43-48).

In regard to Claim 16, Breslau teaches logged information relating to an operating system version and processor type (Figure 2).

In regard to Claim 17, Breslau teaches a system identifier to match parameters with native code (Figure 2, items "SYS A", "SYS B", and "SYS C").

In regard to Claim 19, Breslau teaches a medium (Figure 4) for carrying out said execution of the system in Claim 1.

Claim 30 corresponds with Claim 1, and Claim 30 is rejected for the same reasons as Claim 1, where a signal is an inherent aspect of communication in a data processing system. Spyker's generic image (Java Bytecode) is predetermined to be incompatible with the operating environment of the virtual system, since bytecode is an intermediate code format that is not directly executable. All further limitations have been addressed in the above rejection of claim 1.

In regard to Claim 31, Spyker teaches that this signal is communicated over a network (Figure 5A, items 506 and 507).

11. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breslau, Spyker, and Armstrong as applied in the above rejection of claims 1, 2, 5-10, 12-17, 19, 30, and 31, and further in view of prior art of record U.S. Patent Number 6,721,946 to Fogarty et al. (hereinafter "Fogarty").

In regard to Claim 3, Breslau and Spyker teach the method of Claim 1, but do not teach an image repository to store 1 through N specialized native images, wherein N is a positive integer. Fogarty, however, does teach an image repository for holding a plurality

of software images (Figure 2, item 212). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to build the system of Claim 1, further storing the images in an image repository, since this allows the images to be centrally accessed from one location.

In regard to Claim 4, Fogarty teaches that the image database is a local or remote database (Figure 3, item 212).

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Breslau, Spyker, and Armstrong as applied in the above rejection of claims 1, 2, 5-10, 12-17, 19, 30, and 31, and further in view of prior art of record U.S. Patent Number 6,253,368 to Nelin et al. (hereinafter "Nelin").

In regard to Claim 18, Breslau and Spyker teach the system of Claim 16, but neither teaches that the developer parameters describe at least one of debug options, compiler switch settings and information relating to preferences of a user. Nelin, however, does teach storing development parameters that deal with user preferences of debug options (Column 15, lines 40-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to build the system of Claim 16, as taught by Breslau and Spyker, where the developer parameters describe at least one of debug options, compiler switch settings and information relating to preferences of a user, as taught by Nelin, since these options are also a field that helps to profile the settings and preferences of a computer system and a user.

13. Claims 20-22 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art of record U.S. Patent Number 6,158,049 to Goodwin et al. (hereinafter "Goodwin") in view of U.S. Patent No. 6,126,330 to Knight (hereinafter "Knight").

In regard to Claim 20, Goodwin discloses: determining a first code image associated with a possible runtime environment (Figure 1, item 105 – the determined first code image is the instrumented object code); executing the first code image in an unmodified form in the runtime environment (Figure 2, item 151); and generating runtime feedback associated with the first code image to adjust a subsequent code image according to the runtime environment (Figure 2, items 152 and 107). Goodwin further discloses feedback that includes a set of information to create a code image (See column 16 lines 14-16 – in particular "profile data files"). Goodwin further discloses creation of an image according to a particular user (column 3 line 53 – column 4 line 60 generally describes the process of creation of an optimized executable image from the perspective of a particular user that enters commands – e.g. column 3 lines 53-54 "command from the user"). Goodwin does not expressly disclose runtime feedback associated with a particular user. However, Knight teaches collecting runtime feedback associated with a particular user (See column 6 lines 22-27: "As an application is being used by the developer, as generally shown by numeral 11, all object identifiers corresponding to IWindow objects within the application being changed, affected by or interacted with in some way by the developer /user, are logged in object display area 15 of the screen of setup tool 10"). It would have been obvious to one of ordinary skill in the art at the time

the invention was made to use Knight's teaching of user feedback with Goodwin's code image in order to overcome the problems with "compile-time" instrumentation (see Knight column 2 lines 12-22).

In regard to Claim 21, Goodwin teaches generating a specialized executable from the subsequent code image (Column 4, lines 57-60).

In regard to Claim 22, Goodwin teaches storing the application images in a database (Figure 1, item 107).

In regard to Claim 27, Goodwin teaches at least: organizing data and methods in the first image to optimize the images based on profile data (Column 2, lines 63-67).

In regard to Claims 28 and 29, these are system Claims that correspond with method Claims 20 and 21, and are rejected for the same reasons as Claim 20 and 21 respectively, where Goodwin teaches a system for carrying out said method of Claims 20 and 21 (Figure 1).

14. Claims 23 and 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodwin and Knight as applied in the above rejection of claim 21, further in view of "Compilers: Principles, Techniques, and Tools" by Aho et al. (hereinafter "Aho").

In regard to Claim 23, Goodwin teaches processing a generic image using standard compilation techniques (Figure 1, item 102). Goodwin and Knight do not expressly teach intermediate language. However, in an analogous environment, Aho teaches processing intermediate language code utilizing standard compilation techniques. See Figure 1.9 on page 10; also pages 12-14. It would have been obvious to one of

ordinary skill in the art at the time the invention was made to use Aho's intermediate language with Goodwin's compiler. One of ordinary skill would have been motivated to use a language that is easily translated into a target program (see Aho, last full paragraph on page 12).

In regard to Claim 24, Goodwin teaches the method of Claim 23, but does not teach logging operating environment information during processing of the generic image. Knight, however, does teach logging environment variables of a computer system to compile a generic image (see column 6 lines 22-27). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of Claim 23, as taught by Goodwin, where the method includes logging operating environment information during processing of the generic image, as taught by Knight, since this allows customization of the image to suit the environment.

15. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodwin, Knight, and Aho as applied to the rejection of claim 23 above, and further in view of Breslau.

In regard to Claim 25, Goodwin teaches the method of Claim 23, and Knight teaches product enhancement, but neither teaches building the specialized executable to suit the environment. Breslau, however, does teach generating an environment specific executable (Column 1, lines 65-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of Claim 23, as taught by Goodwin, where the method includes building the specialized executable to suit

the environment, as taught by Breslau, since this allows customization of the executable to suit the environment.

In regard to Claim 26, Breslau teaches selecting the specialized executable by matching a current environment setting with the logged environment information (Column 8, lines 22-27).

16. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Breslau in view of Spyker, Knight, and Nelin.

In regard to Claim 32, Breslau teaches a first data field having parameters relating to at least one of an operating system version (Figure 2, item "OS" in SET Table) and a third data field having a set of information to create an executable image (Figure 3, item 59). Breslau does not teach a second data field having at least one of a developer parameter, a domain flag, a security information field, and a binding information field. Breslau also does not teach the creation of an executable image according to a particular user.

Nelin, however, does teach a developer parameter field for debugging programs (Column 15, lines 40-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to construct a data structure containing a first data field having parameters relating to at least one of an operating system version and a third data field having a profile information field associated with the operating environment of a virtual system, as taught by Breslau, where the structure also contains a second data field having a developer parameter, as taught by Nelin, since a developer parameter is

also a field that helps to profile the settings and preferences of a computer system and a user. Also, Spyker teaches creation of a runtime image according to a user (Spyker column 14 lines 44-46), and Knight teaches collecting runtime feedback associated with a particular user (See column 6 lines 22-27) as addressed in the above rejection of claim 1.

17. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Breslau in view of prior art of record U.S. Patent 6,457,122 to Ramezani (hereinafter "Ramezani "), Knight, and Spyker.

In regard to Claim 33, Breslau teaches an execution engine that processes an image (Figure 3), the execution engine generating operating environment data while processing the image (Figure 2), and a specialized executable image generated at least in part from the operating environment data (Figure 3, item 59). Breslau does not teach that the specialized executable image stored in a repository of one or more other specialized executable images wherein the execution engine selects at least one specialized executable image from the repository if the at least one specialized image matches present operating environment data. Breslau also does not disclose the creation of an image according to a user.

Ramezani, however, does teach a specialized image repository (Column 4, lines 54-57); wherein the execution engine selects at least one specialized executable image from the repository if the at least one specialized image matches present operating environment data (Column 5, lines 11-12). Neither Breslau nor Ramezani teach that the image is an intermediate language image. Spyker, however, does teach processing an

intermediate language image (Column 1, lines 37-44). Also, Spyker teaches creation of a runtime image according to a user (Spyker column 14 lines 44-46), and Knight teaches collecting runtime feedback associated with a particular user (See column 6 lines 22-27) as addressed in the above rejection of claim 1.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to build a system including an execution engine that processes an image, the execution engine generating operating environment data while processing the image, and a specialized executable image generated at least in part from the operating environment data, as taught by Breslau, where the specialized executable image stored in a repository of one or more other specialized executable images wherein the execution engine selects at least one specialized executable image from the repository if the at least one specialized image matches present operating environment data, as taught by Ramezani, since this allows for a centralized storage location for all of the images, as well as an image that is designed specifically for a certain operating environment, further where the first image is an intermediate language image, as taught by Spyker, since this allows the image to be executed on any environment that can handle the intermediate language. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Knight's teaching of user feedback with Breslau's native executable in order to overcome the problems with "compile-time" instrumentation (see Knight column 2 lines 12-22). One of ordinary skill in the art would be motivated to assess software in order to determine if it meets the requirements of the target system (See Ramezani's *Background* section in column 1 lines 23-24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Derek Rutten whose telephone number is (571)272-3703. The examiner can normally be reached on T-F 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571)272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jdr

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